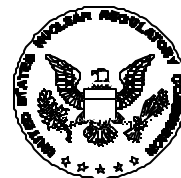


Instructions for the Preparation and Distribution of Material Status Reports

(DOE/NRC Forms 742 and 742C)

Effective Date: October 1, 2003

**Issued by the
U.S. Nuclear Regulatory Commission
Office of Nuclear Security and Incident Response
Washington, DC 20555-0001**



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Effective Date: October 1, 2003

Manuscript Completed: June 2003

Date Published: July 2003

**Prepared by
C.A. Collins, NRC**

B.G. Horn, NRC Project Manager

**Issued by the
U.S. Nuclear Regulatory Commission
Office of Nuclear Security and Incident Response
Washington, DC 20555-0001**



ABSTRACT

NRC regulations require each licensee who is authorized to possess at any one time and location special nuclear material (SNM) in a quantity totaling more than 350 grams of contained uranium-235, uranium-233, or plutonium, or any combination thereof, to prepare and submit, in computer-readable format, reports concerning SNM received, produced, possessed, transferred, consumed, disposed of, or lost. This NUREG contains the reporting instructions for licensees to follow in making these reports.

Paperwork Reduction Act Statement

The information collections contained in this NUREG are covered by DOE/NRC Forms 742 and 742C, which were approved by the Office of Management and Budget, approval numbers 3150-0004 and 3150-0058.

Public Protection Notification

If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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ABBREVIATIONS

CFR	Code of Federal Regulations
DOD	Department of Defense
DOE	Department of Energy
FA	Facility Attachment
IAEA	International Atomic Energy Agency
ICT	inventory change type
ID	inventory difference
KMP	key measurement point
MBA	material balance area
MMDDYYYY	month, day, year
NMMSS	Nuclear Materials Management and Safeguards System
NOL	normal operating losses
NRC	Nuclear Regulatory Commission
NSI	National Security Information
NSIR	Office of Nuclear Security and Incident Response
PIL	Physical Inventory List
Pu	plutonium
RIS	reporting identification symbol
SAMS	Safeguards Management Software
SNM	special nuclear material
TFA	Transitional Facility Attachment
U	uranium
U.S. GOVT	United States Government
WR	Former Soviet Union Weapons Material
WT%	weight percent (of isotope)

U.S. NUCLEAR REGULATORY COMMISSION INSTRUCTIONS FOR THE PREPARATION AND DISTRIBUTION OF MATERIAL STATUS REPORTS

DOE/NRC FORMS 742, "MATERIAL BALANCE REPORT," AND 742C, "PHYSICAL INVENTORY LISTING"

1 INTRODUCTION

The U.S. Nuclear Regulatory Commission (NRC) and the U.S. Department of Energy (DOE) jointly participate in a Nuclear Materials Management and Safeguards System (NMMSS), utilizing common reporting forms to minimize the reporting burden on users of nuclear material required to provide nuclear materials data to one or both agencies in accordance with current regulations or contractual obligations, as appropriate. In this manner, the licensee¹ can file one report to meet the reporting requirements of both DOE and NRC. Compliance with specific reporting requirements is monitored by the agency for which the specific data is required.

1.1 Regulatory Authority

NRC regulations require each licensee who is authorized to possess at any one time and location² special nuclear material (SNM) in a quantity totaling more than 350 grams of contained U²³⁵, U²³³, or plutonium, or any combination thereof, to prepare and submit in computer-readable format reports concerning SNM received, produced, possessed, transferred, consumed, disposed of, or lost. The reporting periods for Category I facilities are October 1 to March 31 and April 1 to September 30 of each year. These reports must be filed within 30 days of the end of the period covered by the report, unless an alternate date is authorized by the NRC. Reports for all other facilities are to be made and filed within 60 days of the start of the physical inventory taking, unless an alternate date is authorized by the NRC. If licensees are reporting pursuant to 10 CFR Part 75, reports are to be dispatched as soon as possible and in any event within 30 days of the start of the physical inventory taken as part of the licensee's material accounting and control procedures.

A separate DOE/NRC Form 742 shall be completed for each material type of SNM for which a reportable quantity is possessed or a reportable inventory change has occurred during the period. Reportable quantities are defined in NUREG/BR-0006.

Also, each Federal or State licensee, who is authorized to possess at any time or location more than 1,000 kilograms of source material must submit a statement of foreign obligated source material inventory. A DOE/NRC Form 742 may be used. The reporting period is October 1 to September 30 of each year (unless an alternate period is authorized by NRC). The reports must be filed within 30 days of the end of the period covered by the report, or as specified in Facility

¹ The term "licensee" denotes an NRC or Agreement State licensee or an NRC certificate holder.

² A reporting identification symbol (RIS) is requested by a licensee and assigned by NRC and/or DOE.

Attachments (FAs) if the licensee is reporting pursuant to the 10 CFR Part 75.

Refer to the DOE Orders Series 470 (DOE Order 474.1 and DOE Manuals M 474.1, "Control and Accountability of Nuclear Material," and M 474.1-2, "Nuclear Materials Management and Safeguards System Reporting and Data Submission") for U.S. GOVT-owned material holdings.

1.2 Reporting/Distribution Requirements

The DOE/NRC Form 742 has three sections in addition to the facility identification is data in blocks 1 through 5. Section A, "Material Accountability," of lines 7 through 83 are used to report material accountability data such as receipts, shipments, usage, losses, and gains. Section B, "Foreign Obligations," is used to report the distribution of the total inventory on hand by country of obligation as defined in the instructions for completing DOE/NRC Form 741. Section C, "Certification," is used to certify all entries on the form.

Proprietary information must be included in all reporting forms when necessary to provide an adequate response. An application to withhold such information from public disclosure may be made, and will be disposed of, in accordance with the provisions of 10 CFR 2.790. If any of this information is of particular sensitivity, a request may be made that the information not be physically transmitted to the International Atomic Energy Agency (IAEA). Such a request must refer to, and conform with, 10 CFR 75.12.

2 INSTRUCTIONS FOR COMPLETING DOE/NRC FORM 742

DOE/NRC Form 742, "Material Balance Report," should be completed in accordance with the instructions in this NUREG and in NMMSS Report D-24, "Personal Computer Data Input for NRC Licensees," as appropriate. NMMSS Report D-24 provides instructions and examples for preparation of required electronic submittals to the NMMSS.

The following numbered instructions correspond to the numbered blocks and lines on DOE/NRC Form 742 to be completed by licensees.

1. NAME AND ADDRESS - Leave blank.
2. LICENSE NUMBER(S) - Leave blank.
3. REPORTING IDENTIFICATION SYMBOL (RIS) - Enter the RIS which has been assigned and under which the source or special nuclear being reported is or was held. Submit a separate report for each RIS.
4. REPORT PERIOD - Enter the inclusive dates.

5. MATERIAL TYPE - Enter the appropriate material type code for the material being reported, as follows:

<u>CODE</u>	<u>DESCRIPTION</u>
10	Depleted uranium (U)
20 ³	Enriched uranium
50	Plutonium (Pu)
70	U ²³³
81	Normal uranium
83 ⁴	Pu ²³⁸
88	Thorium
89	Uranium in cascade

Complete a separate DOE/NRC Form 742 for each SNM or source material type even in cases where two or more types are combined.

When U²³⁵ and U²³³ are mixed, report the total element weight of the mixture in the element weight column of both the U²³⁵ report and the U²³³ report, and reflect this fact in a concise note (DOE/NRC Form 740M) for each report.

6a. PROCESS CODE - Leave blank.

6b. CORRECTION IDENTIFICATION - Leave blank.

³ If reporting enriched uranium (material type 20), enter the appropriate enrichment level code along with 20, as follows:

<u>Code</u>	<u>Description</u>
E1	Greater than normal but less than 5%
E2	5% or more but less than 20%
E3	20% or more but less than 80%
E4	80% or more

⁴ Report as Pu²³⁸ if the contained Pu²³⁸ is greater than 10% of total Pu by weight; otherwise, report as plutonium.

2.1 Section A, "Material Accountability"

Use columns A and B to enter all numeric data by element and isotope weight.⁵

COLUMN A - ELEMENT WEIGHT⁵

Enter the total element weight of the SNM or source material being reported. If Pu²³⁸, report to the nearest 0.1 gram. Report all other SNM to the nearest gram and all other source material to the nearest kilogram.

COLUMN B - ISOTOPE WEIGHT⁵

In the case of enriched uranium or U²³³, enter the weight of the isotope U²³⁵ or U²³³ as appropriate; in the case of plutonium, enter the weight of the isotopes Pu²³⁹ and Pu²⁴¹, and in the case of Pu²³⁸, enter the weight of the isotope Pu²³⁸. If Pu²³⁸, report to the nearest 0.1 of a gram. If depleted uranium, enter the weight of the isotope U²³⁵ to the nearest kilogram. Make no entry for other source material.

7. DOE/NRC 740M ATTACHED - Check the appropriate box to indicate whether or not a DOE/NRC Form 740M, "Concise Note," is attached.
8. BEGINNING INVENTORY - U.S. GOVT-OWNED - Enter the inventory of U.S. GOVT-owned special nuclear material or source material as of the beginning of business on the first day of the period covered by the report. The quantities reported on line 8 (columns A and B) must agree with the quantities on line 80 on the last report submitted.
9. BEGINNING INVENTORY - NOT U.S. GOVT-OWNED - Enter the inventory of non-U.S. GOVT-owned special nuclear material or source material as of the beginning of business on the first day of the period covered by the report. The quantities reported on line 9 (columns A and B) must agree with the quantities on line 81 of the last report submitted.

RECEIPTS

11. PROCUREMENT FROM DOE - Enter quantities of special nuclear material (or source material) which have been purchased from DOE during the reporting period and reported to the NRC on DOE/NRC Form 741. This may be done by listing individual receipts for each individual RIS as reported on DOE/NRC Form 741 or a total of receipts for each individual RIS during the reporting period. (SNM or source material quantities entered on line 11 are not entered on line 30.) Licensees reporting under 10 CFR Part 75 must list receipts individually.

⁵ Round up fractions of 0.5 or greater. If the quantity to be entered is less than 0.5 of the reporting unit, round it down to the next whole reporting unit.

13. PROCUREMENT FOR THE ACCOUNT OF DOE - Enter quantities of special nuclear material (or source material) which have been purchased for the account of DOE during the reporting period and reported to the NRC on DOE/NRC Form 741. This may be done by listing individual receipts for each individual RIS as reported on DOE/NRC Form 741 or a total of receipts for each individual RIS during the reporting period. (SNM or source material quantities entered on line 13 are not entered on line 30.) Licensees reporting under 10 CFR Part 75, must list receipts individually.
14. DOD RETURNS - USE A - Leave blank.
15. DOD RETURNS - USE B - Leave blank.
16. DOD RETURNS - OTHER USES - Leave blank.
21. PRODUCTION - Enter the calculated net quantity of plutonium or U²³³ produced in the fuel and/or blanket material of a reactor during the reporting period. For licensees reporting under 10 CFR Part 75, if the fuel from which the plutonium or U²³³ produced was removed or discharged from the reactor during this reporting period, enter the discharged quantity on line 21 directly after the word "Production."
22. FROM OTHER MATERIALS - Enter increases resulting from the introduction of another material into the material balance being reported. If the added quantity is the result of blending, identify the balance supplying the material by entering the appropriate inventory change type (ICT) code from the following list:
- | | |
|----|--|
| EN | Enriched to normal |
| ED | Enriched to depleted |
| NE | Normal to enriched |
| ND | Normal to depleted |
| DE | Depleted to enriched |
| DN | Depleted to normal |
| EE | Enriched (low/high) to enriched (high/low) |
- EE can be low enrichment to high or high to low (i.e., any combination of the E1 through E4 material type codes).
30. RECEIPTS REPORTED TO NRC ON DOE/NRC 741 (not listed elsewhere) - Enter the SNM or source material received from others and reported to the NRC on Form DOE/NRC 741 and not listed elsewhere on this form. This may be done by listing individual receipts by RIS as reported on DOE/NRC Form 741 or a total of receipts from each individual RIS during the report period. Licensees reporting under 10 CFR Part 75 must list receipts individually.
34. RECEIPTS - MICS - List on this line multiple receipts of quantities of SNM or source material that fall below the reporting level for DOE/NRC Form 741 but that cumulatively total a reportable unit. Attach a list showing the name and RIS (if applicable) of the shipper, the date of the transaction, and the quantity received. A DOE/NRC Form 741 reporting miscellaneous receipts (ICT 34) must be completed. This requirement

includes nuclear material removed from inventory but now returned to inventory, if not accounted for elsewhere.

- 37. PROCUREMENT BY OTHERS - Leave blank.
- 38. DONATED MATERIAL - FROM U.S. GOVT TO OTHERS - Enter the amount of material received as a donation from the U.S. GOVT.
- 39. DONATED MATERIAL - FROM OTHERS TO U.S. GOVT - Enter the amount of material received as a donation by others to the account of the U.S. GOVT.
- 40. TOTAL - Enter the sums of columns A and B (lines 8 through 39).

REMOVALS

- 41. EXPENDED IN SPACE PROGRAMS - Leave blank.
- 42. SALES TO U.S. GOVT - Enter quantities of SNM or source material which have been sold to the U.S. GOVT during the reporting period and have been reported to NRC on DOE/NRC Form 741. This may be done by listing individual shipments by RIS as reported on DOE/NRC Form 741 or a total of shipments to each individual RIS during the reporting period. (SNM or source material quantities entered on line 42 are not entered on line 51.)
- 43. SALES TO OTHERS FOR THE ACCOUNT OF U.S. GOVT - Enter quantities of special nuclear material which have been sold for the account of the U.S. GOVT during the reporting period and have been reported to NRC on DOE/NRC Form 741. This may be done by listing individual shipments by RIS as reported on DOE/NRC Form 741 or a total of shipments to each individual RIS during the reporting period. (SNM or source material quantities entered on line 43 are not entered on line 51.)
- 44. DEPARTMENT OF DEFENSE (DOD) - USE A - Leave blank.
- 45. DOD - USE B - Leave blank.
- 46. DOD - Other USES - Leave blank.
- 47. EXPENDED IN U.S. GOVT TESTS - Leave blank.
- 48. ROUTINE TESTS - Leave blank.
- 49. SHIPPER - RECEIVER DIFFERENCE - Leave blank.
- 51. SHIPMENTS REPORTED TO NRC/DOE on DOE/NRC 741 (not listed elsewhere) - Enter the quantities of special nuclear material or source material shipped to others and reported to the NRC on DOE/NRC Form 741 but not listed elsewhere on this form. This may be done by listing individual shipments by RIS as reported on DOE/NRC Form 741 or a total of shipments to each individual RIS during the reporting period.

54. SHIPMENTS - MISC. - List on this line multiple shipments of quantities of SNM or source material that fall below the reporting unit for DOE/NRC Form 741 but that cumulatively total a reporting unit or more. Attach a list showing the name and RIS of the receiver (if applicable), the date of the transaction, and the quantity shipped. A DOE/NRC Form 741 reporting miscellaneous shipments (ICT 54) must be completed. Facilities reporting pursuant to 10 CFR Part 75 should also include transfers to burials on this line rather than on line 74.
58. DONATED MATERIAL - TO U.S. GOVT BY OTHERS - Enter the amount of nuclear material removed by a donation to the U.S. GOVT.
59. DONATED MATERIAL - TO OTHERS BY THE U.S. GOVT - Enter the amount of nuclear material removed from a U.S. GOVT account by donation to others.
65. ROUNDING BIAS - Leave blank.
71. DEGRADATION TO OTHER MATERIALS - Enter decreases resulting from the introduction of other material into the material balance being reported. If the decreased quantity is the result of blending, identify the balance losing the material by entering the appropriate code from the list in line 22 above.
72. DECAY - Enter the amount of radioactive decay which occurred during the reporting period for plutonium and Pu²³⁸. When the SNM being reported is plutonium, enter the amount of radioactive decay of the isotope Pu²⁴¹ if the decay is 1 gram or more. The decay factors for calculating the decay of Pu²⁴¹ are based on a half-life of 14.29 years.
- When the SNM being reported is Pu²³⁸, enter the amount of radioactive decay of the isotope Pu²³⁸ if the decay is 0.1 gram or more. Pu²³⁸ decay is calculated based on a half-life of 87.7 years.
73. FISSION AND TRANSMUTATION - Enter the calculated quantities of SNM lost by fission and transmutation in a reactor.
74. NORMAL OPERATIONAL LOSSES/MEASURED DISCARDS - Normal operational losses (NOLs) and measured discards are material that has been discarded, whether in the form of solids, liquids, or gases, as determined by measurement or by estimate on the basis of measurement. Facilities reporting pursuant to 10 CFR Part 75 should not report transfers to burials on this line but on line 51. For all other facilities, include on this line all material discarded, including material transferred to an authorized recipient for disposal [a list should be attached detailing transfers to burial facilities; such transfers should not be included on line 51(SHIPMENTS REPORTED) on DOE/NRC Form 741].

All material that leaves the inventory through the process of normal operational losses/measured discards must be accounted for on a DOE/NRC Form 741. A four-lettered RIS must be created. To account for these discards, the following codes are to be used.

If the discard is to the atmosphere (A), a Form 741 will be prepared with the shipper's RIS entered in both the shipper's and receiver's block but with an A appended to the RIS in the receiver's block.

Similarly, if the discard is to a lagoon or pond (L), append an L to the receiver's RIS; for a discard to the ground (G), append a G; if the material goes off the inventory into a holding (H) area for later removal to a burial site, append an H to the receiver's RIS. When the material is eventually shipped to a burial site, the transfer series on the Form 741 will show the shipper's RIS with an H appended and the appropriate V series RIS in the receiver's block. Remove discards from inventory only when the material has been disposed of (a) by transfer to an authorized recipient or holding area as provided in the regulations in 10 CFR Part 40 or 74; (b) as authorized pursuant to 10 CFR 20.2002 (Commission-approved disposal methods); (c) as provided in 10 CFR 20.2003 (the disposal of licensed material by release into sanitary sewerage systems) or 10 CFR 20.2004 (treatment or disposal by incineration) or 10 CFR 20.1302 (concentrations in effluents to unrestricted areas); or (d) as provided in corresponding regulations of Agreement States.

- 75. ACCIDENTAL LOSSES - Accidental loss is the irretrievable and inadvertent loss of a known quantity of SNM or source material as the result of an operational accident, as determined by measurement or by estimate on the basis of measurement.
- 76. APPROVED WRITE-OFFS - Leave blank.
- 77. INVENTORY DIFFERENCE - Inventory difference (ID) is the difference between physical inventory and book inventory after the book has been adjusted for all receipts and removals. A negative entry reports a gain. A positive entry reports a loss.
- 80. ENDING INVENTORY - U.S. GOVT-OWNED - Enter the ending inventory which is U.S. GOVT-owned as of the end of the last day of the period covered by this report.
- 81. ENDING INVENTORY - NOT U.S. GOVT-OWNED - Enter the ending inventory which is not U.S. GOVT-owned as of the last day of the period covered by this report.
- 82. TOTAL - Enter the sums of lines 41 through 81. The totals reported on this line must agree with those on line 40.
- 83. BIAS ADJUSTMENT - The ID bias adjustment is that quantity of material which should be added to or subtracted from the ID quantity on line 77 to produce the best estimate of an unbiased ID. The adjustment represents the algebraic summation of the impact of measurement system biases on each component of the measured plant material balance. Include on this line the sum of the bias adjustments for the ID for the current period. Any prior period adjustments should also be included on this line. Do not include bias adjustments that have already been applied to the source data in the material balance equation.

2.2 Section B, "Foreign Obligations"

The total amount of obligated nuclear material on hand as of the end of the reporting period must be accounted for by material type. It may not exceed the physical inventory.

The following column entries are required:

1. COUNTRY OF OBLIGATION - Enter the unique obligated code for each category of nuclear material. The codes are listed in Appendix C. An updated listing is available from the NMMSS operator.
2. ELEMENT WEIGHT - Enter the element weight (Pu, U, or Th) of the obligated special nuclear material or source material in the reporting units specified for column A of Section A of the form (see Section 2.1 of this NUREG).
3. ISOTOPE WEIGHT - Enter the appropriate isotope weight; if enriched uranium or U²³³, enter weight to the nearest gram of U²³⁵ or U²³³, as appropriate. If plutonium, make no entry.
4. TOTAL WEIGHT - Enter the totals for columns 2 and 3. These totals represent the total obligated material at the facility. Total weight of obligated nuclear material may not exceed the total element weight.

2.3 Section C, "Certification"

SIGNATURE, TITLE, AND DATE - The report, if submitted as a hard copy, shall be signed by an authorized representative of the licensee. If submitted electronically, each licensee must establish internal procedures to ensure that the information provided in the report is accurate and that the report has been prepared and issued only by the authorized licensee personnel.

2.4 Preparation of DOE/NRC FORM 742 in Computer-Readable Format

NMMSS Report D-24 provides instructions for preparing DOE/NRC Form 742 in computer-readable format as required for submittal.

There are several automated methods for submitting data to the NMMSS:

(1) Telephonic Transfers to the NMMSS

A licensee may submit the DOE/NRC Form 742 electronically by using a modem. To establish an electronic connection with the NMMSS, licensees must contact the NMMSS security officer to request establishment of a connection with the direct link. If the facility is a valid facility for the type of link requested (classified or unclassified), the security officer provides the requester with the appropriate forms to complete.

Upon receipt of the completed forms, the security officer creates a user ID and password and establishes an account for the facility. The user ID and password are then forwarded to the user facility along with a password acknowledgment form. The licensee signs the acknowledgment form and returns it to the security officer, who then activates the user ID and password.

(2) Data Submittals on Diskettes

DOE/NRC Form 742 should be submitted in computer-readable format unless reporting per 10 CFR 40.64(b) or 10 CFR 150.17. NMMSS Report D-24 provides instructions on handling techniques and format requirements for data submittals using diskettes.

(3) Safeguards Management Software (SAMS)

The SAMS is a miniature version of the Nuclear Materials Management and Safeguards System (NMMSS). This software allows the user to perform edit checks, generate various reports, perform import and export transactions, and complete material balance and inventory data. The SAMS program, with the appropriate formats and user prompts, may be obtained from the NMMSS program manager free of charge.

(4) New or Modified Methods of Transferring Electronic Data

New or modified methods of transferring electronic DOE/NRC Form 742 data to NMMSS may be authorized by the NRC. Authorization to use additional methods for the transfer of this data may be confirmed by contacting the NMMSS contractor's program administrator.

2.5 Documentation and Distribution

The completed DOE/NRC Form 742 should be submitted to the NMMSS operator. Before submitting data, confirm the address of NMMSS and the method of providing data by calling the NMMSS operator. Note that the specific documentation and distribution instructions depend on whether the DOE/NRC Form 742 contains classified or unclassified information.

Any DOE/NRC Form 742 which is classified must be documented and handled in accordance with all pertinent security requirements. The same goes for any DOE/NRC Form 742 which is unclassified. Please confirm the mailing address before sending documents to NMMSS.

Distribute the completed report as follows:

- Submit one copy of the completed report and all supporting sub-schedules and lists to NMMSS.
- Retain one copy for your file.

3 INSTRUCTIONS FOR COMPLETING DOE/NRC FORM 742C, “PHYSICAL INVENTORY LISTING”

DOE/NRC Form 742C describes the status of the nuclear material reported on lines 80 and 81 of DOE/NRC Form 742, as of the end of the reporting period. There are two separate sets of procedures for filing DOE/NRC Form 742C, one for licensees required to report pursuant to 10 CFR 74.13 and the other licensees required to report under 10 CFR Part 75.

The instructions for completing the form are presented separately for the two categories of licensees.

3.1 Licensees Reporting Under 10 CFR 74.13

The following numbered instructions correspond to the numbered blocks or lines to be completed by licensees on DOE/NRC Form 742C, “Physical Inventory Listing” (PIL). Source material with no foreign obligation is exempt from this requirement.

1. NAME AND ADDRESS - Leave blank.
2. DOE/NRC FORM 740M ATTACHED - Check the appropriate box to indicate whether or not a DOE/NRC Form 740M is attached.
3. REPORTING IDENTIFICATION SYMBOL (RIS) - Enter the RIS of the reporting facility.
4. INVENTORY DATE - Enter the ending date of the reporting period for the Material Balance Report.
5. PROCESS CODE - Leave blank.
6. CORRECTION I.D. - Leave blank.
7. LICENSE NUMBER(S) - Leave blank.
8. BATCH DATA - The basic reporting entity is the batch, defined as “a portion of nuclear material handled as a unit for accounting purposes at a key measurement point and for which the composition and quantity are defined by a single set of specifications or measurements. The nuclear material may be in bulk form or contained in a number of separate items.”

A batch may have only one value for:

- batch name
- number of items
- composition/facility code
- key measurement point
- measurement basis
- scrap program
- owner code

In general, all of the data for one batch will be entered on one line of block 8 of the DOE/NRC Form 742C. An exception is when a single discrete item contains more than one material (e.g., irradiated fuel containing both uranium and plutonium); in this case, a separate line should be used for the data for each material, and all data common to all materials in the batch should be entered on the first line.

8a. MATERIAL TYPE CODE

Enter the appropriate special nuclear material type code, as follows:

<u>Code</u>	<u>Description</u>
10	Depleted uranium
20 ⁶	Enriched uranium
50	Plutonium
70	U ²³³
81	Normal uranium
83	Pu ²³⁸
88	Thorium
89	Uranium in cascade

8b. COMPOSITION/FACILITY (COMP/FAC) CODE - Enter the appropriate code from the following table.

<u>Code⁷</u>	<u>Description</u>
860	In reactors and critical assemblies
861	In cooling basins
862	In conversion and fabrication processes
863	In recovery processes
864	Material not in process
865	Unirradiated scrap awaiting recovery
866	Unirradiated scrap awaiting disposal

⁶ If reporting enriched uranium (material type 20), enter the appropriate enrichment level code along with 20, as follows:

<u>Code</u>	<u>Description</u>
E1	Greater than normal but less than 5%
E2	5% or more but less than 20%
E3	20% or more but less than 80%
E4	80% or more

⁷ See Appendix A for more detailed code instructions. Enrichment facilities are authorized to continue using the inventory composition codes that have been previously defined in the facility inventory profile.

- 8c. ELEMENT WEIGHT - Enter the element weight as instructed for columns A and B of Section A of DOE/NRC Form 742 (see Section 2.1 of this NUREG).
- 8d. ISOTOPE WEIGHT - Enter the isotope weights as instructed for columns A and B of Section A of DOE/NRC Form 742 (see Section 2.1 of this NUREG).
- 8e. DOE PROJECT NO. - Make no entry unless reporting U.S. GOVT-owned material. See DOE Manual M 474.1-2 for guidance.
- 8f. SCRAP PROGRAM - Leave blank.
- 8g. WEIGHT PERCENT ISOTOPE - Leave blank.
- 8h. OWNER CODE - Entry required. See paragraph 2.1, item 26i, of NUREG/BR-0006.
- 8i. SEQUENCE NUMBER - Enter the line number. Number lines consecutively. Do not repeat or skip numbers.
- 8j. BATCH NAME - No entry required. Can be used as licensee desires.
- 8k. NO. OF ITEMS - No entry required. Can be used as licensee desires.
- 8l. KEY MEASUREMENT POINT - Leave blank.
- 8m. MEASUREMENT I.D. - Leave blank.
- 8n. ENTRY STATUS - Leave blank.
- 8o. MATERIAL BALANCE AREA (MBA) - Leave blank.
- 8p. SITE IDC - Leave blank.
9. TOTALS - Enter the total inventory reported in the above categories. This total must agree with the sum of the quantities entered on lines 80 and 81 on the DOE/NRC Form 742.
10. SIGNATURE - The report, if submitted as hard copy, shall be signed by an authorized representative of the licensee. Otherwise, each licensee must establish internal procedures to ensure that the information provided in the report is accurate and that the report has been prepared and issued only by authorized licensee personnel.
11. TITLE - Enter the title of the person submitting the report (required for paper submission only).
12. DATE - Enter the date the report was submitted (required for paper submission only).

Submit the data as specified in Section 2.4.

DOE Manual M 474.1-2 contains requirements for reporting the status of nuclear material for U.S. GOVT-owned inventory. Reporting data for U.S. GOVT-owned inventory in an expanded level of detail is a DOE reporting requirement which also meets inventory reporting requirements of NRC. The total of GOVT-owned inventory on which inventory data is reported must agree with the quantity entered on line 80 (ENDING INVENTORY-U.S. GOVT - OWNED) on the DOE/NRC Form 742.

3.2 Licensees Reporting Under 10 CFR PART 75

The instructions in this section apply only to facilities which have been notified by letter from the NRC, as provided in 10 CFR 75.11, that they have been identified under the U.S./IAEA Safeguards Agreement. Facilities that are required to submit initial inventory reports under 10 CFR 75.32 and for which a physical inventory is not performed shall prepare DOE/NRC Form 742 according to the instructions in Section 2.1, completing lines 2, 3, 4, 80, 81, and 82. The information in the initial inventory report may be based upon the licensee's book record. Facilities reporting under this section must file subsequent Material Balance Reports based upon a physical inventory and are required to attach a completed DOE/NRC Form 742C, "Physical Inventory Listing" (PIL). Such reports are required with respect to each physical inventory taken as part of the material accounting and control procedures required by 10 CFR 75.21. Unless otherwise specified by license conditions, such reports shall be dispatched as soon as possible and in any event within 30 days of the start of the physical inventory.

After completion of Form 742, prepare the submittal in computer-readable format following the instructions in NMMSS Report D-24.

The following numbered instructions correspond to the numbered blocks or columns to be completed by licensees on the PIL.

1. NAME AND ADDRESS - Leave blank.
2. DOE/NRC FORM 740M ATTACHED - Check the appropriate box to indicate whether or not a DOE/NRC Form 740M is attached.
3. REPORTING IDENTIFICATION SYMBOL (RIS) - Enter the RIS of the reporting facility.
4. INVENTORY DATE - Enter the ending date for the period covered by the Material Balance Report.
5. PROCESS CODE - Leave blank.
6. CORRECTION I.D. - Leave blank.
7. LICENSE NUMBER(S) - Leave blank.
8. BATCH DATA - The basic reporting entity is the batch, defined as "a portion of nuclear material handled as a unit for accounting purposes at a key measurement point and for which the composition and quantity are defined by a single set of specifications or

measurements. The nuclear material may be in bulk form or contained in a number of separate items.”

A batch may have only one value for:

- batch name
- number of items
- composition/facility code
- key measurement point
- measurement basis
- scrap program
- owner code

In general, all of the data for one batch will be entered on one line of block 8 of the DOE/NRC Form 742C. One exception is when if a single discrete item contains more than one material (e.g., irradiated fuel containing both uranium and plutonium); in such a case, a separate line should be used for the data for each material, and all data common to all materials in the batch entered should be on the first line.

8a. MATERIAL TYPE - Enter the appropriate special nuclear material type code, as follows:

<u>Code</u>	<u>Description</u>
10	Depleted uranium
20 ⁸	Enriched uranium
50	Plutonium
70	U ²³³
81	Normal uranium
83	Pu ²³⁸
88	Thorium
89	Uranium in cascade

8b. COMPOSITION/FACILITY (COMP/FAC) CODE - Enter the appropriate code from the list developed during the formulation and negotiation of the facility attachment or transitional facility.

8c. ELEMENT WEIGHT - Enter the weight of the contained special nuclear material or source material in the same units as specified for Section A of DOE/NRC Form 742 (see Section 2.1 of these instructions).

⁸ If reporting enriched uranium (material type 20), enter the appropriate enrichment level code along with 20, as follows:

<u>Code</u>	<u>Description</u>
E1	Greater than normal but less than 5%
E2	5% or more, but less than 20%
E3	20% or more, but less than 80%
E4	80% or more

- 8d. ISOTOPE WEIGHT - Enter the isotope weight. If enriched uranium or U^{233} , enter the weight to the nearest gram of U^{235} or U^{233} , as appropriate. If plutonium, enter the sum of Pu^{239} and Pu^{241} to the nearest gram. If Pu^{238} , enter the weight of the isotope Pu^{238} to the nearest 0.1 gram. For depleted uranium, enter the U^{235} isotope weight to the nearest kilogram. Make no entry for other source material.
- 8e. DOE PROJECT NO. - Make no entry unless reporting U.S. GOVT-owned material. See DOE Manual M 474.1-2 for guidance.
- 8f. SCRAP PROGRAM - Make no entry unless reporting U.S. GOVT-owned material. See DOE Manual M 474.1-2 for guidance.
- 8g. WEIGHT PERCENT ISOTOPE - Enter the weight percent of the isotope U^{235} if uranium enriched or depleted in U^{235} . If plutonium, enter the weight percent of the isotope Pu^{240} . If Pu^{238} , enter the weight percent of the isotope Pu^{238} . Report weight percent to at least two, but not more than four, decimal places, depending on the accuracy of the measurement method (for example, XX.XXXX%). For U^{233} , enter the parts per million of U^{232} . This column does not apply for normal uranium or thorium. Use separate lines to report material of different enrichments.
- 8h. OWNER CODE - This code describes the ownership of the material at the time it was in the shipper's possession. Enter the appropriate code from the list below.
- | | |
|---|-----------------------|
| G | U.S. Government-owned |
| J | Privately owned |
- 8i. SEQUENCE NUMBER - Enter the line number. Use consecutive numbers. Do not repeat or skip numbers.
- 8j. BATCH NAME - Enter a unique identifier for the batch as defined in block 8. If the batch is a discrete item with a unique identifying serial number or name [e.g., a fuel assembly, sealed source, or uranium hexafluoride (UF_6) cylinder], enter the identification number of the batch name. Note that the same batch name must not appear twice in the same report.
- 8k. NO. OF ITEMS - If the batch is composed of a number of discrete items, enter the number of items. If the batch is bulk material, or if the number of items is not meaningful, enter zero. If more than one line is used to report data on the batch, enter the number of data items on each line.
- 8l. KEY MEASUREMENT POINT - Enter the code for the appropriate inventory key measurement point, as specified in the FA or Transitional Facility Attachment (TFA).
- 8m. MEASUREMENT I.D. - Fill in the three sections of this data field as follows.
- 8m1. MEASUREMENT BASIS: Enter the pertinent one-character code from the following:

- N if batch data are based on measurements made in an IAEA material balance area (MBA) (RIS) other than the reporting MBA (RIS)
- L if batch data are based on measurements made in another IAEA MBA (RIS) and have been previously reported by the reporting MBA (RIS) in a DOE/NRC Form 741, "Nuclear Materials Transaction Report" or a DOE/NRC Form 742C, "Physical Inventory Listing"
- M if batch data are based on measurements made in the reporting IAEA MBA (RIS) and the data were not previously reported
- T if batch data are based on measurements in the reporting IAEA MBA (RIS) and have been previously reported for that MBA (RIS) in a DOE/NRC Form 741 or 742C
- 8m2. OTHER MEASUREMENT POINT - If the batch data are based on measurements made at a different KMP from the one specified above, enter the one-letter identification of the key measurement point at which the measurements were made.
- 8m3. MEASUREMENT METHOD - In some cases, the FA or TFA may provide codes for identifying the measurement method used. In such cases, enter the appropriate code.
- 8n. ENTRY STATUS - Enter an "N".
- 8o. MBA - Leave blank.
- 8p. SITE IDC - Leave blank.
9. TOTALS - Enter the totals for columns c, d, and i.
10. SIGNATURE - The form, if submitted as hard copy, must be signed by an authorized representative of the licensee. Otherwise, each licensee must establish internal procedures to ensure that the information provided in the report is accurate and that the report has been prepared and issued only by the authorized licensee personnel.
11. TITLE - Enter the title of the person who signed the report (required for paper submission only).
12. DATE - Enter the date the report was signed (required for paper submission only).

APPENDIX A

COMPOSITION CODE INSTRUCTIONS

860 In Reactors and Critical Assemblies

Enter this code for SNM or source material in reactors, test piles, and critical assemblies, and SNM being used for radiation studies. Use code 864 to report excess, spare, or transiently used fuel elements.

861 In Cooling Basins

Enter for irradiated SNM or source material in cooling basins held for future recovery or disposal (including reactor-produced SNM). Use this code also for spent fuel in dry storage.

862 In Conversion and Fabrication Processes

Enter for SNM or source material in conversion or fabrication processes which change its chemical or physical form. Sealed sources, unopened receipts, and ultimate products maintained under tamper-safing are not considered "in process."

863 In Recovery Processes

Enter for SNM or source material in a recovery process (i.e., nuclear material in the process of being separated from original fuel and other reactor products and nuclear material in the process of being removed from undesired materials and converted to usable forms).

864 Materials Not in Process

Enter for SNM or source material in all unopened receipts, sealed sources, and ultimate products maintained under tamper-safing.

865 Unirradiated Scrap Awaiting Recovery

Enter for SNM or source material in unirradiated scrap material which is awaiting in-house or offsite recovery.

866 Unirradiated Scrap Awaiting Disposal

Enter for SNM or source material in unirradiated scrap material which is awaiting transfer to an authorized disposal facility.

APPENDIX B

**DOE/NRC FORM 742, "MATERIAL BALANCE REPORT," (BLANK) AND
DOE/NRC FORM 742C, "PHYSICAL INVENTORY LISTING" (BLANK)**

DOE/NRC FORM 742 (8-2003) MANDATORY DATA COLLECTION AUTHORIZED BY 10 CFR 30, 40, 50, 70, 72, 74, 75, 150, Public Laws 83-703, 93-438, 95-91	U.S. DEPARTMENT OF ENERGY AND U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB: NO. 3150-0004 Estimated burden per response to comply with this mandatory collection request: 5 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov , and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0004), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.	EXPIRES: 08/31/2006
MATERIAL BALANCE REPORT			

1. NAME AND ADDRESS		2. LICENSE NUMBER(S)	3. REPORTING IDENTIFICATION SYMBOL (RIS)
6a. PROCESS CODE	6b. CORRECTION IDENTIFICATION	4. REPORT PERIOD (MM/DD/YYYY) FROM	5. MATERIAL TYPE (Submit separate report for each type) TO

SECTION A		MATERIAL ACCOUNTABILITY	
7. DOE/NRC 740M ATTACHED <input type="checkbox"/> YES <input type="checkbox"/> NO		A. ELEMENT WEIGHT	B. ISOTOPE WEIGHT
8. BEGINNING INVENTORY -- U.S. GOVT-OWNED			
9. BEGINNING INVENTORY -- NOT U.S. GOVT-OWNED			
RECEIPTS			
11. PROCUREMENT FROM DOE	RIS		
FROM:			
13. PROCUREMENT -- FOR THE ACCOUNT OF DOE			
14. DOD RETURNS -- USE A			
15. DOD RETURNS -- USE B			
16. DOD RETURNS -- OTHER USES			
21. PRODUCTION			
22. FROM OTHER MATERIALS	a. ICT		
	b. ICT		
	c. ICT		
30. RECEIPTS REPORTED TO DOE/NRC ON DOE/NRC 741 (not listed elsewhere)			
FROM:			
RIS			
34. RECEIPTS -- MISC			
37. PROCUREMENT BY OTHERS			
38. DONATED MATERIAL -- FROM U.S. GOVT TO OTHERS			
39. DONATED MATERIAL -- FROM OTHERS TO U.S. GOVT			
40. TOTAL (Lines 8-39)			
REMOVALS			
41. EXPENDED IN SPACE PROGRAMS			
42. SALES TO U.S. GOVT RIS TO:	RIS		
TO:			
43. SALES TO OTHERS FOR THE ACCOUNT OF U.S. GOVT			
TO:			
44. DOD -- USE A			
45. DOD -- USE B			
46. DOD -- OTHER USES			
47. EXPENDED IN U.S. GOVT TESTS			
48. ROUTINE TESTS			
49. SHIPPER -- RECEIVER DIFFERENCE			
51. SHIPMENTS REPORTED TO NRC/DOE ON NRC/DOE 741 (not listed elsewhere)			
TO:			
RIS			

[illegible]

APPENDIX C
OBLIGATION CODES

Table 1

<u>Obligation Code</u>	<u>Country/Entity</u>
31	Australia
32	Canada
33	EURATOM
34	Japan
35	People's Republic of China
36	Czech Republic
91	Australia and EURATOM
92	Canada and EURATOM
WR	Former Soviet Union Weapons

NOTE: EURATOM- As of January 2002, an organization consisting of the following member countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.

For any other obligation codes, contact the NMMSS for further instructions.